Marks

2. Two cables are used to lift the bridge section shown in Figure Q2(*a*).

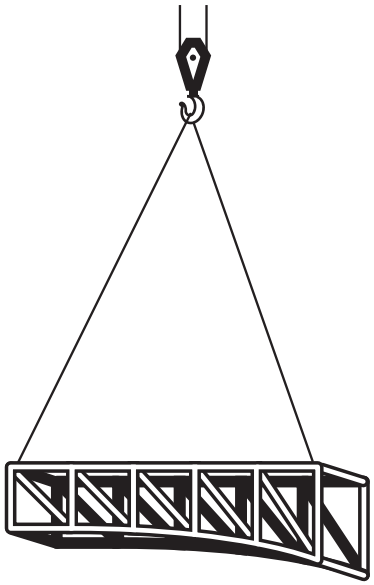

Figure Q2(*a*)

The bridge section can be considered to be a beam in **static equilibrium** when supported by the cables, and can be represented by the free-body diagram shown in Figure Q2(*b*).

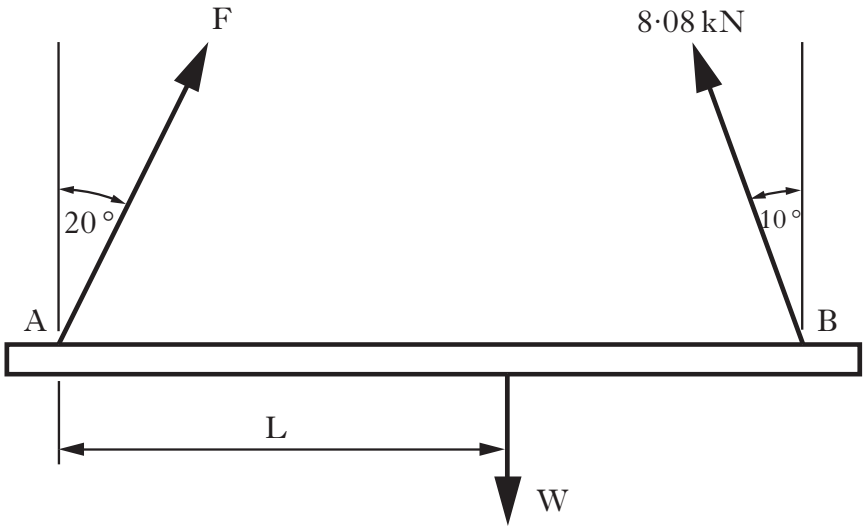

Figure Q2(*b*)

(*a*) Calculate the force, F, in the cable acting at A, by resolving horizontally. **3**

(*b*) Calculate the weight, W, of the bridge section. **3**

The length of the bridge section between points A and B is 5 m.

(*c*) Calculate the distance, L, by taking moments. **5**

(11)

Marks

3. The joint shown in Figure Q3(*a*) forms part of the roof structure of a new museum.

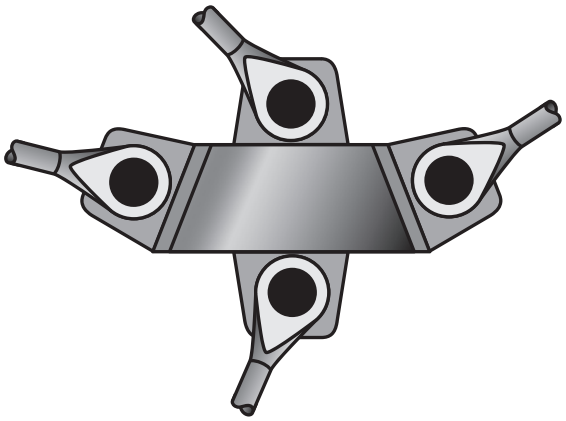

Figure Q3(*a*)

The forces acting on the joint are in **static equilibrium** and are shown *in simplified form* in Figure Q3(*b*).

(*a*) Explain the meaning of the term "static equilibrium". **2**

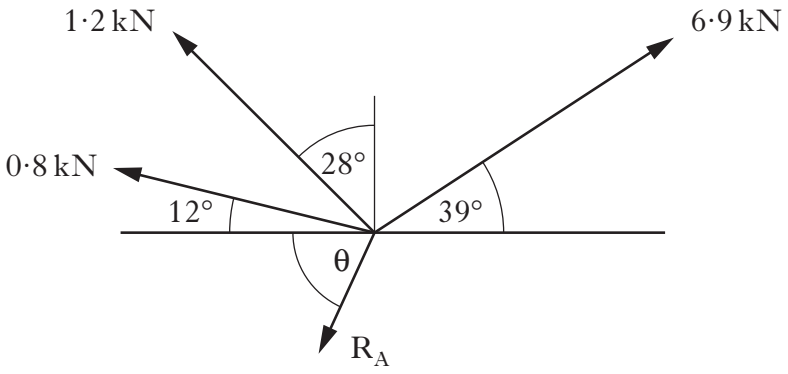

Figure Q3(*b*)

(*b*) Calculate the magnitude of the reaction force R_A and the angle θ. **12**

(14)